Effect of utilizing Geometer's Sketchpad on performance and mathematical thinking of secondary mathematics learners: An initial exploration

ABSTRACT

Educational researchers globally have articulated high expectations for the utilization of computer in improving the teaching and learning of mathematics. The teaching and learning of geometry utilizing dynamic geometry softwares have been explicitly indicated in the Malaysian secondary school Mathematics syllabus. Teachers were recommended to utilize licensed dynamic geometry softwares such as the Geometer's Sketchpad (GSP) software. This study attempted to explore and compare the effects of integrating the GSP and the traditional teaching strategy in the teaching and learning process. Specifically, the effects on mathematical performance in secondary mathematics and students' attitudes towards the respective approaches used to teach the groups were investigated. The mean overall mathematical performance for the group using the GSP was 11.78 (SD = 4.10) while the mean overall performance for traditional teaching strategy group was 13.03 (SD = 3.65). Independent samples t-test results showed that there was no significant difference in mean mathematical performance between the GSP group and the traditional teaching strategy group, [t (90) = 1.552, p>0.05]. Findings also indicated that the use of GSP induced higher mathematical thinking process amongst the GSP group. These findings showed that the use of GSP had an impact on both mathematical thinking process and performance. However, these findings provided evidences of limited and deficient use of the technology, specifically in the teaching of mathematics at the Malaysian secondary level.

Keyword: Geometer's Sketchpad, mathematical performance, mathematical thinking, mental load